

### Abstract of the Disclosure

Provided is a system and method for terrestrial digital broadcasting service using a single frequency network without additional equipment. The system and method synchronizes input signals into transmitting stations by inserting a transmission synchronization signal into a header of TS periodically, and solves the problematic ambiguity of the trellis encoder by including a trellis encoder switching unit separately and initializing a memory of the trellis encoder. The terrestrial digital broadcasting system includes: a broadcasting station for multiplexing video, voice and additional signals into transport stream (TS) and transmitting the TS to the transmitting stations and a transmitting stations for receiving the TS and broadcast the TS to receiving stations through a single frequency network